UNITED
NATIONS

TD

United Nations Conference
on Trade and Development

Distr.
GENERAL

TD/B/CN.1/IRON ORE/8
30 August 1993

Original: ENGLISH

TRADE AND DEVELOPMENT BOARD
Standing Committee on Commodities
Intergovernmental Group of Experts
on Iron Ore
Second session
Geneva, 25 October 1993
Item 4 of the provisional agenda

REVIEW OF THE CURRENT SITUATION AND OUTLOOK FOR IRON ORE - 1993

Report by the UNCTAD secretariat

This report describes developments in the world iron ore market in 1992 and in the first half of 1993. The main purpose of the report is to stimulate an exchange of views on the current situation and outlook for the international iron ore market. Detailed statistics appear in the document entitled "Iron Ore statistics 1983-1992" (TD/B/CN.1/IRON ORE/7) prepared by the UNCTAD secretariat.

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I. OVERVIEW AND SUMMARY

1. Reflecting the weakness of the world economy, 1992 was a difficult year for the world minerals and metals industry, and for iron ore it was no exception. Iron ore demand further declined, and trade was more affected than production. The downward pressure on prices started in 1992 and was further accentuated in 1993. Despite those poor price developments, investments to ensure a long-term stable supply were maintained. During the first half of 1993 the iron ore international market had not shown any sign of recovery. World demand for imported ores remained weak, although a slight improvement by the end of the year is not excluded.

2. In 1992, about 903 million tons of iron ore were produced worldwide, 5 per cent less than the year before. The combination of the recession-led decline of steel production in Japan, the return of the "steel crisis" scenario in the EEC, and the highly depressed steel market in Eastern Europe adversely affected the global demand for traded iron ore.

3. The overall picture, however, was not completely dark. The Chinese booming-effect became more visible, and China became the largest iron ore mining country and the fourth iron ore importer. Neverthless, the volume of 196 million tons of extracted ores does not mean directly usable ores since they are low grade and have to be concentrated. The Chinese domestic iron ore production remains insufficient to meet the fast-growing appetite of the Chinese steel industry. The potential of the Chinese iron ore market has become the main focus of attraction for current and future iron ore demand.

4. Also on the positive side is the expansion of steel output and iron ore demand in developing countries. In addition to increases during 1992 in the so-called dynamic Asian economies, particularly in the Republic of Korea, steel output in India expanded considerably, placing this country among the top ten world steel producers. In the West Asia, steel demand is also expanding, and Latin America has resumed growth.

5. The big losers in 1992 were the iron ore exporting countries, since the shrinkage of steel output was concentrated in major importing markets, while increases in steel output and hence in iron ore consumption took place mostly in major iron ore producing countries. World trade in iron ore dropped by 8 per cent to 365 million tons, and all major exporters were affected.

6. Despite the reduced volume and value of exports, in which overall exports earnings were around 700 million dollars lower in 1992, investments in capacity expansion, technological improvements and environmental management continued. While the market situation remains weak in 1993, better prospects are foreseen for 1994.

II. FEATURES INFLUENCING IRON ORE DEMAND

7. Following weak steel developments, world apparent consumption of iron ore was estimated at 910 million tons in 1992, more than 35 million tons lower than

in 1991 (see table 1). This contraction mainly resulted from the sharp drop in iron ore consumption in Japan and Germany, the two major importing markets. In addition, the deepening of industrial disruption in the Commonwealth of Independent States (CIS) as well as in other East European countries also helped to weaken iron ore global consumption. All types of marketable ores suffered from the slackening demand, but the market reacted less adversely to lumps as compared to other ore products.

Table 1
Apparent consumption of iron ore
(million tons)

Regions or Countries	1983	1986	1990	1991	1992
Developed Countries	307.0	357.6	393.7	385.1	358.7
of which:					
EEC	122.5	134.9	137.1	134.4	126.4
Japan	109.5	115.6	125.5	127.3	113.8
USA	48.3	51.9	70.3	64.8	62.4
Developing Countries	90.5	131.1	145.8	153.0	160.0
of which:					
Asia	41.5	56.5	73.2	83.9	87.8
Latin America	37.6	57.4	59.3	58.0	61.8
Africa	4.7	9.3	7.6	7.3	8.1
Countries of East Europe	260.8	267.5	247.5	204.6	160.4
of which:					
Former USSR	202.2	203.8	199.7	171.5	135.0
Socialist countries of Asia	122.8	161.2	193.9	204.0	231.3
of which:					
China	114.7	152.7	183.7	193.8	221.1
World Total	**781.1**	**917.4**	**981.0**	**946.7**	**910.4**

Source: UNCTAD secretariat - "Iron Ore Statistics 1983-1992".

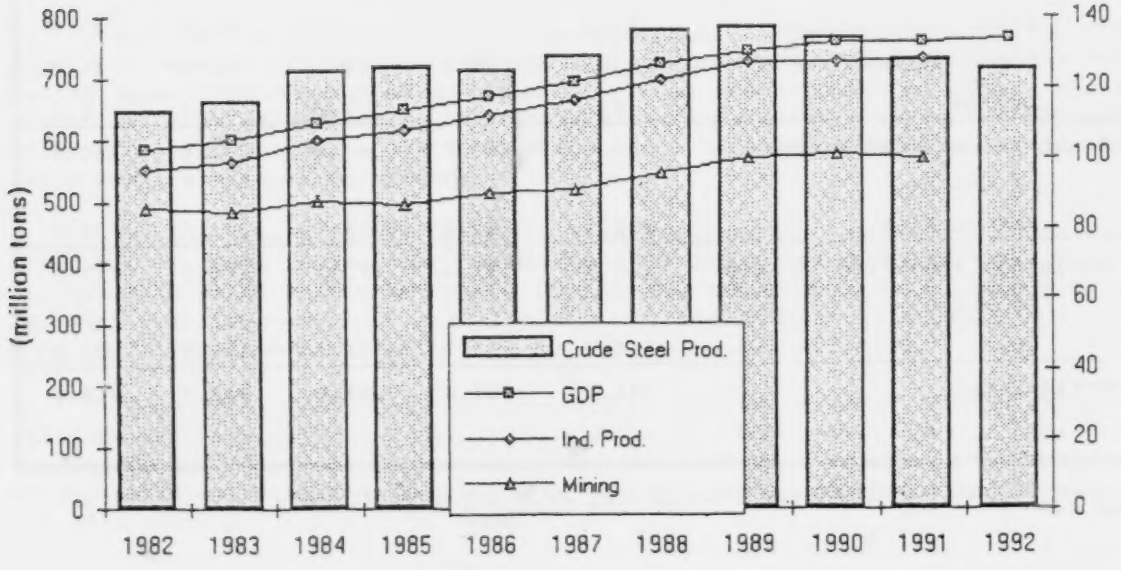
8. There were, however, some areas of growth. In China, for example, iron ore consumption reached record levels in 1992. Given the fast growth of the Chinese steel industry, China has became, since 1991, the biggest iron ore consuming country, and this upward trend continued during the first half of 1993. In the United States, following the increase of steel production, iron ore

consumption in 1992 was 8 per cent higher than in 1991. Developing countries, mainly Asia and Latin America, also consumed higher volumes of iron ore in 1992, while in the OECD region the situation was the opposite (table 1).

A. Steel production

9. Structural changes and recession were the underlying factors behind the contraction of the steel market in 1992 (see chart 1). Growing tensions in international steel trade, low prices of steel products, and restructuring, became the major issues in the international steel market during the year. The decline worldwide of crude steel production by nearly 2 per cent brought down world output to 717 million tons. This led to shifts in competitive positions of major actors and regions. In 1992/93, ten years after the recessionary 1982/83 period, the iron and steel industry was again in crisis. In both periods, the cyclical economic downturn highlighted the need to pursue restructuring measures more vigorously.[1]

Chart 1
World economy and steel production



Source: UNCTAD secretariat
United Nations indices of industrial production, mining and GDP growth rates in constant prices (1980=100)

10. The most noticeable steel event of 1992 was the contrasting development in China and Japan. While steel output boomed in China (+14%), it dropped sharply in Japan (-10.5%). In addition, with the exception of North America and Australia, steel output in 1992 only increased in developing countries. Noteworthy was the growth of steel output in India, which for the first time ranked among the top ten steel producing countries. Steel production also increased considerably in the Republic of Korea and Brazil. In contrast, steel output further slumped in the CIS republics, and disagregated statistics for 1992 would place the Russian Federation behind Japan, and Ukraine close to Germany, in the list of the 10 major steel producing countries.

Table 2
Major steel-producing by major producing countries, 1983-1992
(million tons)

Country	1983	1986	1990	1991	1992	1992/1991 Change %
1 Former USSR	152.5	160.5	154.3	132.7	116.8	-11.9
2 Japan	97.2	98.3	110.3	109.6	98.1	-10.5
3 USA	76.8	74.0	88.9	79.7	84.3	5.7
4 China	39.0	52.2	66.3	70.4	80.0	13.6
5 Germany*	35.7	37.1	38.4	42.2	39.7	-5.8
6 Rep.of Korea	11.9	14.5	23.1	26.0	28.1	7.9
7 Italy	21.8	23.0	25.5	25.1	24.9	-0.8
8 Brazil	14.7	21.2	20.6	22.6	23.9	5.8
9 India	10.2	12.2	15.0	17.1	18.1	5.9
10 France	17.6	17.7	19.0	18.4	18.0	-2.4
World Total	**662.5**	**713.3**	**766.7**	**730.9**	**716.9**	**-1.9**

Source: UNCTAD and the International Iron & Steel Institute (IISI).
* For 1991 and 1992, unified territory.

11. In the developed market-economy countries as a group, marginal GDP growth led to lower investments, reduced levels of industrial output and weakened steel demand. In the OECD region, total crude steel production was in 1992 more than 10 million tons below its level of 1991. In Japan, the drop in steel output in 1992 was deeper than expected, and Japanese crude steel production was below 100 million tons for the first time in five years (see table 2). Despite the two major economy-stimulating programs launched by the Government in March and August, the real growth rate of the Japanese economy fell from 4.1 per cent in

1991 to 1.5 per cent in 1992, with a decline in private capital investment and personal consumption. Manufacturing, in particular the automobile industries, and the non-residential construction were the most affected steel-consuming sectors[2]. During the first half of 1993, public work and exports mainly to China, were supporting Japanese steel production but economic recovery was still too slow for a major growth in domestic demand. Crude steel production in Japan for the January-June period was nevertheless 5 per cent higher in 1993 than in 1992, and a better recovery is expected for the last quarter of the year.

12. In the EEC as a whole, and in Germany in particular, weak domestic demand combined with higher imports of steel products affected the level of steel production in 1992, which was 4 per cent lower in the EEC region, totalling 132 millions tons. The economic situation of EEC's countries was relatively stable during the first half of 1992, but since then it has been deteriorating and investments have been declining. Restructuring, privatizations and mergers are changing the structure of the EEC steel industry, and efforts are being made with a view to re-establishing a supply/demand equilibrium for steel, but prospects for 1993 are not promising. An increase of crude steel production this year seems unlikely, particularly because Germany is facing an economic recession and its crude steel output may further decline by more than 5 per cent during 1993. The first semester of this year pointed already into this direction, since EEC total steel output was nearly 5 per cent lower than in 1992.

13. In the United States, however, the situation was the reverse. The first signs of economic recovery increased consumers confidence and pushed up steel demand. The United States crude steel production was almost 6 per cent higher in 1992. During the first half of 1993, economic indicators suggested that the United States economy was slowly gaining strength and a rebound in the automotive and construction sectors in particular, helped to maintain the level of crude steel production 2 per cent above that of 1992. It is expected that steel activity will continue to increase in the United States in 1993.[3]

14. In the Commonwealth of Independent States (CIS) (former USSR less the Baltic Republics and Georgia) and in Eastern Europe as a whole, the economic situation has further deteriorated and steel output continues to fall sharply. In 1992 alone it declined by 12 per cent, and during the last five years the level of crude steel produced in this region dropped by more than 35 per cent. Despite this reduction, the republics of the CIS remain the world's largest crude steel producing area with a production of 117 million tons. However, lower steel consumption in the former USSR reflects two important developments: on the one hand, the problem of internal distribution of steel to its end-users, which is a question of services rather than production; and, on the other hand, the reduction in the steel-intensity resulting from a better utilization of steel by the steel-consuming sectors, mainly machinery and construction. Furthermore, steelmaking itself continues to be affected by the bad distribution of coal and scrap inside the Republics, as well as the lack of hard currency to pay for imported inputs and raw materials.

15. A National Development Programme for the Steel Industry is underway in the CIS. In early 1993 a protocol was signed by the Russian Federation, Ukraine and Kazakhstan to make possible duty-free trade in metallurgical products and steel-related commodities between these Republics[4]. Some remedial measures are being gradually implemented, in particular with a view to organizing the internal

distribution system for steel and related raw materials, and to facilitating the administrative and financial arrangements between the Republics, given their mutual reliance. Nevertheless, the restructuring of the iron and steel industry in the CIS, as well as in most other East European countries, has still a long way to go, and it will continue to influence the world steel market on both the supply and demand sides. With the exceptions of Hungary and Poland, there was no sign of improvements during the first half of 1993. In the CIS, crude steel output further dropped by 12 per cent during the first half of 1993 as compared with the same period in 1992.

16. In China steel production grew by over 13 per cent in 1992, reaching a record level of 80 million tons. Led by economic reforms, the acceleration of GDP growth, and massive investments in basic construction, Chinese steel demand is booming and has a great potential for further increase. This buoyancy reflects the increasing demand from highly intensive steel-consuming sectors such as housing, infrastructure and durables. The official target for crude steel output in 2000 was recently revised upward to 100-120 million tons. Over the decade China has been the fastest growing steel producing country, and alone is currently responsible for 11 per cent of world crude steel output. Expansion of existing steel plants, as well as the construction of new steelworks are envisaged to keep pace with the buoyant demand. China is already playing, and will continue to play, a key role in the world steel scene, and will greatly influence iron ore trade flows in the coming years.

17. In developing countries as a whole, steel output rose 6 per cent to 126 million tons in 1992, accounting for 18 per cent of world total output. Asia had the strongest growth, thanks mainly to the considerable increase of steel output in India, and the expansion of steel capacity in the Republic of Korea. Strong increases in steel production also occurred in Turkey, Islamic Republic of Iran and Saudi Arabia in 1992, a trend which is expected to continue in 1993.

18. In Latin America the economic adjustment measures implemented in most countries started to give positive results and regional steel consumption, as well as exports of steel products, increased. As a result, regional steel output grew 5 per cent in 1992 compared to 1991. Steel production increased in most Latin American countries, including the three major steelmaking countries, namely Brazil, Mexico and Venezuela. Privatizations continue and the process of regional integration and trade agreements under the MERCOSUL (Southern Cone Common Market), and the NAFTA (North America Free Trade Agreement) is taking concrete shape.

19. In Africa, with the continued unfavourable economic conditions in most countries, steel production and consumption remained extremely low, accounting for less than 0.5 per cent of the world total.

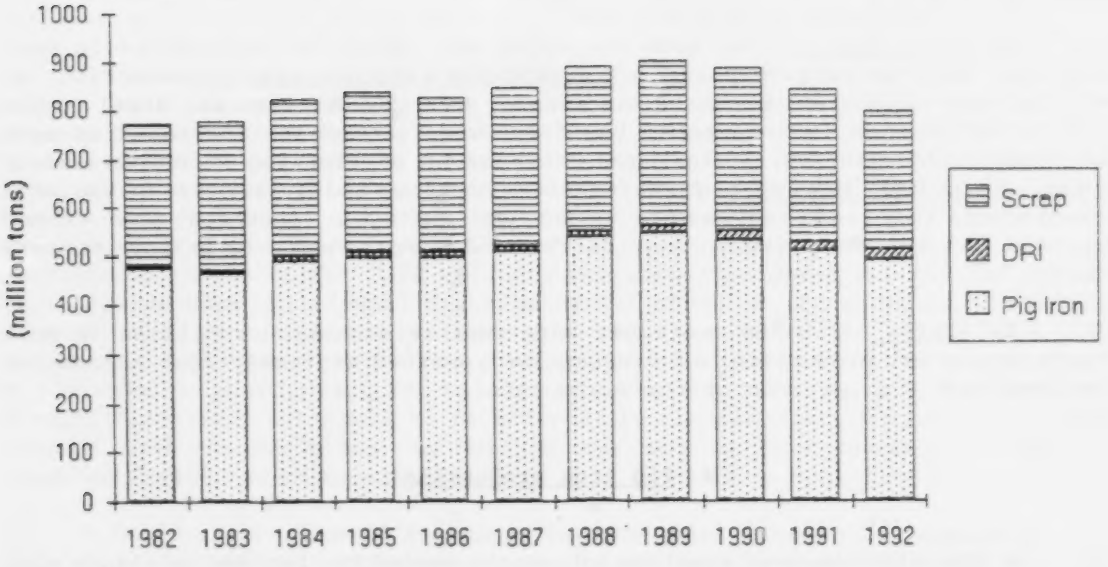
B. Pig iron production

20. In line with the weak steel market, world demand for ferrous metallics also declined in 1992 (see chart 2 below). World pig iron output fell below 500 million tons, its lowest level in five years. Weak scrap prices pushed down pig iron output, which dropped more than crude steel. China produced more hot pig

iron metal than Japan in 1992, and became the world's second largest producer. If the current trend persists, production by the CIS may further decline, and China is likely to be the largest pig iron-making country, possibly already in 1993. As in the case of steel, pig iron production increased in developing countries where steel production was growing, and further dropped in Eastern Europe.

21. Mini-mills continue to gain ground and are gradually taking market slices of higher value-added steel products, which traditionally belonged to integrated steelmakers. A recent study suggested that a 1 per cent increase in crude steel produced by mini mills corresponds to about 1.5 million tons less of iron ore consumption.[5] In 1992, 28 per cent of world steel was produced in electric arc furnaces (EAF) against 23 per cent in 1982[6] . This development is re-shaping the traditional structure of the world iron and steel industry, and increasing the competition of scrap vis-à-vis pig iron, and DRI vis-à-vis scrap. In modern plants greater flexibility in the mix of these materials is possible. Nevertheless, in order to produce high quality steel products, high quality ferrous metallics are also required. This is placing DRI in an advantageous position, since the scrap quality problem is not yet solved.

Chart 2
World demand for ferrous metallics



Source: UNCTAD secretariat.

22. The price/quality relationship is the real issue for the choice of the iron units needed for steelmaking. The market downturn of 1992/93 has demonstrated that price differentials dictate the pig iron/scrap/DRI competition. It is estimated that about 8 million tons of pig iron were traded in the world market in 1992 mainly by Russian Federation, Ukraine and Brazil. During the first semester of 1993, in view of unstable supply from Russian Federation and Ukraine, as well as reduced charcoal pig iron production in Brazil owing to stricter reforestation laws, demand became tight in the Asian market and prices for cold ferrous materials started increasing. Pig iron was being sold at around US$140.00/t C&F in May 1993.

Table 3
Pig iron trade
(million tons)

Major Exporters	**1990**	**1991**	**1992e**	**Major Importers**	**1990**	**1991**	**1992e**
Former USSR	6.3	3.2e	2.0	Japan	3.3	3.4	1.5
Brazil	3.5	2.6	2.4	East. Europe	4.0	2.6e	2.0
South Africa	0.7	0.5	0.5	West. Europe	3.7	3.2	3.0
Total incl. others	**12.0e**	**10.0e**	**8.0e**	**Total incl. others**	**12.0e**	**10.0e**	**8.0**

Source: UNCTAD Iron Ore Statistics, 1983-1992.
e= estimates

C. Direct reduced iron (DRI) or sponge iron

23. The DRI market continued its upswing in 1992, despite the slackening steel demand. World production of DRI reached a new record of nearly 21 million tons, about 8 per cent higher than in 1991. DRI output has almost tripled over the last decade, although, as shown in chart 2 above, it still has a very tiny share of the world demand for iron inputs. The search for cleaner technologies has also been favouring gas-based direct reduction methods. Following the expansion of EAF mills, new DRI capacity continues to be built, although the ratio of under-utilized capacities remains very high. At present, DRI plants are being built in India, Indonesia, Islamic Republic of Iran, Libyan Arab Jamahiriya and Malaysia.[7] The construction of DRI plants is also under consideration in Australia and Thailand.

24. MIDREX forecasts world DRI production at 28 million tons by 1995 and 35 million tons by 2000. However, this can only materialize with sufficient availability of DR-pellets and lumps. It is reported that the gap between iron oxide consumption and DR-grade capacity is decreasing.[8] Technical advances allow DRI plants to operate successfully with 100 per cent pellets or 100 per cent lumps, or a flexible mix of the two. It seems that the potential of the DRI market should be re-assessed by pellets and lump suppliers. On the other hand, prices for DR-grade pellets and lumps should be attractive to encourage supply stability.

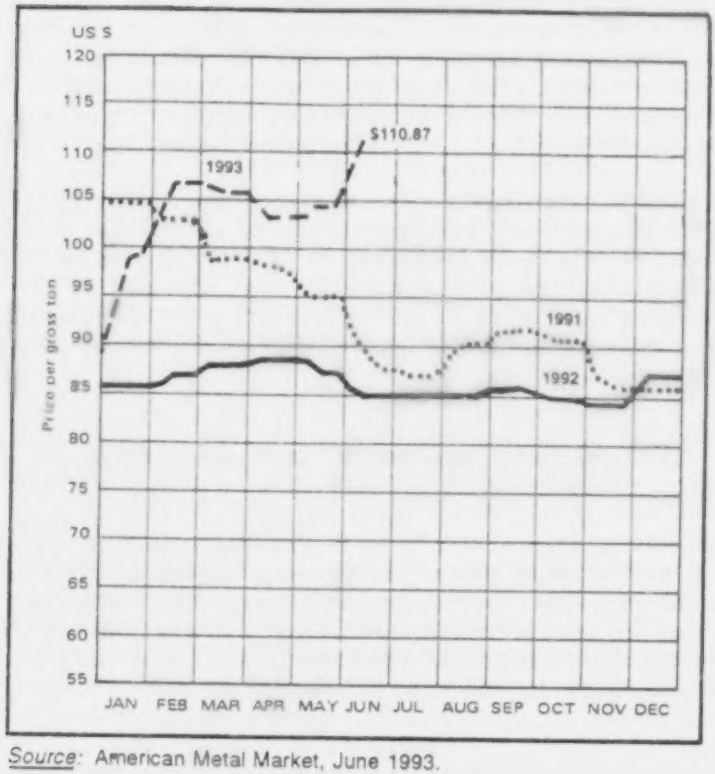
25. Trade of DRI/HBI (hot briquetted iron) is also increasing. In 1992 more than 3.5 million tons of DRI were sold in the world market, mainly by Venezuela and Malaysia. Up to now, DRI prices have competed quite closely with No.1 scrap prices. However, given the consistent quality advantage of DRI, an attempt is being made to establish a price mechanism specially adapted to DRI, in order to avoid its parallelism with scrap prices.

D. Ferrous scrap

26. Ferrous scrap remains the only substitute for primary iron in steelmaking. In 1992 as steel developments varied considerably from region to region, demand for scrap remained relatively steady thanks to new electric furnace capacity, and to its price advantage. Scrap prices remained extremely low throughout 1992 and by November 1992 they had reached the bottom, at a level more than 15 per cent below that of 1991. The turning point occurred in January 1993 when scrap prices in the United States rose on average by US$10/t to US$15/t, and this upward move spread also to Europe and Asia. This upturn was driven by two causes: (i) a long period of low prices provoked a shortage of obsolete scrap; and (ii) the growing Chinese imports of ferrous and steel products. The volatility of scrap prices is known, and a seasonally-adjusted price recovery was expected. However, the magnitude and the momentum of this upturn not only had a great influence on the prices of other cold ferrous materials but also had some side-effects for the recovery of steel prices.[9] During the first half of 1993, scrap prices continued on the upswing (see chart 3), causing supply shortages of good quality scrap, particularly in Asia.

27. Speculations regarding stable scrap availability at competitive quality and prices have intensified. However, as shown in chart 2 above, the scrap consumption in steelmaking has remained relatively stable over the last decade. Apparently the growing use of scrap in electric furnaces just compensated for its lower intake in blast furnaces and open hearth. According to UNCTAD secretariat estimates, in 1992 scrap trade remained close to the level of 1991. Exports from the United States were maintained at the level of 9 million tons. Japan is now a net exporter, owing to the growing volume of domestic scrap generation. In the CIS, problems of scrap collection, processing, stocking and distribution have been affecting not only the CIS exports but also scrap deliveries to local steel plants.

Chart 3
Evolution of scrap prices



Source: American Metal Market, June 1993.

Table 4
Major ferrous scrap traders
(million tons)

Major Exporters	**1990**	**1991**	**1992p**	**Major Importers**	**1990**	**1991**	**1992p**
USA	11.6	9.3	9.2	Italy	6.0	6.0	5.8
Germany*	5.0	7.3	7.7	Spain	4.3	4.3	4.0
France	3.7	3.4	3.5	Rep.of Korea	3.9	3.5	3.7
U.K.	3.9	3.2	2.8	Turkey	3.8	4.4	4.4
Former USSR	2.7	n.a.	n.a.	India	2.2	2.8	3.1
Total				**Total**			
incl. others	**34.0**	**32.0**	**30.5**	**incl. others**	**31.0**	**30.0**	**29.0**

Source: UNCTAD, UN-ECE and IISI
p= provisional
*= from 1991, unified territory

E. Iron ore stocks

28. Iron ore stocks reached high levels throughout 1992. During the first semester, it was the sharp drop of shipments into Japan which provoked the increase of iron ore inventories. By the end of the year, the problem was in Europe. Downward adjustments in production and rescheduling of shipments were insufficient to avoid stock building in most mining loading places. Some suppliers, in particular from the Atlantic region, managed to have better control over stocks but in general shipment cutbacks were higher than expected.

29. Inventories held by steelmakers at the mills and at port stock-yards were higher than usual at the end of 1992, particularly in Europe, triggering lower iron ore prices for 1993. In Japan, however, at the end of the calendar year iron ore stocks were lower than the year before, but at the end of the fiscal year (March 1993) Japanese stocks were slightly higher. In the United States, the level of iron ore stocks at the mines as well as at consuming plants decreased in the course of the year.[10]

III. FEATURES INFLUENCING IRON ORE SUPPLY

30. World production of iron ore fell to 903 million tons in 1992, about 5 per cent lower than in 1991. Among the major producers, China was the only one to increase iron ore output (+12%) last year, and became the top producing country, although not in terms of usable ores given its low-grade (35% Fe). All export-oriented producing countries suffered from the gloomy international demand. The strongest decline was again in the CIS, by nearly 20 per cent.

Table 5
Major iron ore producing countries, 1983-1992
(million tons, natural weight)

Country	1983	1986	1990	1991	1992	1992/1991 Change %
1 China*	110.3	140.6	169.3	175.3	195.9	+11.8
2 Former USSR	245.0	250.0	236.0	198.9	162.0	-18.5
3 Brazil	92.1	129.0	152.3	150.7	145.8	-3.2
4 Australia**	71.5	94.0	112.0	122.0	115.0	-5.7
5 India	38.1	51.2	53.7	56.9	54.9	-3.5
6 USA	38.6	39.5	55.5	55.5	54.9	-1.1
7 Canada	33.3	36.7	36.0	37.1	34.4	-7.2
8 South Africa	16.6	24.5	30.3	28.9	28.2	-2.5
9 Sweden	13.5	20.5	19.9	19.3	19.3	-0.3
10 Venezuela	9.5	16.2	20.1	19.9	18.0	-9.5
World Total	**778.0**	**914.7**	**976.5**	**949.9**	**902.7**	**-5.0**

Source: UNCTAD Secretariat - "Iron Ore Statistics 1983-1992"
* low-grade ** dry basis

31. In terms of Fe content the decline was more pronounced, given the growing volume of low grade ores from China, as stated above. The world average dropped from 56.8 per cent Fe to 56.1 per cent Fe during the 1991/92 period, since world Fe production declined to 507 million tons. This highlights the importance of quality. It also helps to make a distinction between a major producer and a major world supplier. The great challenge for iron ore suppliers over the last decade was to find the most cost-effective ways of complying not only with the demand for larger quantities but above all with the increasingly strict quality requirements as regards higher iron content, chemical and physical composition, lower gangue, granulometry, reducibility, etc. Today, all these elements are essential for producing high quality iron and steel products.[11] This explains why, owing to its quality handicap, current Chinese iron ore production is insufficient to cope with the growing demand of its steel industry.

A. World market for agglomerated ores

Sinter

32. Lower pig iron production led to lower sinter output. World sinter production was 479 million tons in 1992, 38 million tons lower than in 1991. This decline reflected the further drop of sinter output in the CIS and Eastern Europe, as well as the downturn in the Japanese steel market. In the EEC, since the cutback in steel production started only during the last quarter of 1992, the decrease in sinter production was limited. In China and in developing countries of Asia and Latin America the production of sintered ore continue to grow. In Philippines, despite the shortages of power which affected the operation of one of the world's largest plants, PSC's annual production in 1992 was nearly 5 million tons.

33. In a number of countries, old sinter plants are being closed or modernized in order to meet stricter environmental legislation. In the CIS some sinter plants are being rehabilitated not only for environmental reasons, but also with a view to improving the quality of the sinter produced as well as to reducing the intake of fines, from 15-20 per cent to 3-5 per cent.[12]

Pellets

34. The growing demand for DR-pellets has been insufficient to improve pellet market conditions, which remained depressed in 1992. Pellet production and trade dropped by 9 per cent in 1992. Pellet consumption in blast furnaces usually increases fast during the peaks, but it is seriously hit at downturns. In spite of the further reduction in pellet premium, the mills have been consuming higher quantities of cheaper lump ores, particularly in Europe where pellets accounts for about 25 per cent of the blast furnaces ore requirements. In Japan pellet consumption declined by 13 per cent in 1992, and accounted for only 5 per cent of the Japanese total ore requirements. CIS's pellet output and exports further declined in 1992. DR-pellets are produced in the Russian Federation only at the Oskol steelworks, which produced 1.6 million tons in 1992.

Table 6
World pellet exports, 1988-1992
(million tons)

Country	1988	1989	1990	1991	1992
Brazil	23.8	23.3	20.0	24.0	21.3
Canada	17.6	17.3	12.7	14.4	13.3
Former USSR	10.9	11.5	12.3	10.0	10.0
Sweden	6.5	6.5	6.5	6.4	6.7
United States	5.2	2.9	3.0	4.0	4.6
Chile	3.5	3.6	3.4	3.8	2.7
India	1.6	1.9	1.7	1.3	1.5
Venezuela	0.8	1.2	1.2	0.8	1.8
Australia	2.0	1.6	1.7	0.7	0.6
Peru	1.5	1.5	1.2	0.8	1.8
Norway	1.1	1.0	1.2	1.3	0.7
Liberia	3.2	3.3	1.5	0	0
World Total	**75.7**	**74.9**	**72.5**	**67.7**	**64.5**

Source: UNCTAD Secretariat - "Iron Ore Statistics 1983-1992".

35. Owing to the sharp decline of pellet production in the CIS in 1991/92, the United States became the largest producer and consumer of pellets. In the United States there are 10 pellet plants in operation which together produced 55 million tons in 1992, mostly for domestic consumption, since about 85 per cent of blast furnaces charge in North America is made of pellets. Cleveland Cliffs, the largest pellet producer in the Western world, accounts for about 40 per cent of North America pellet output. It operates five mines with a combined capacity of 35 million tons, which produced 33 million tons in 1992[13]. In North America, a growing number of steel works are using fluxed pellets, which accounted for more than half of the United States 1992 pellet output.

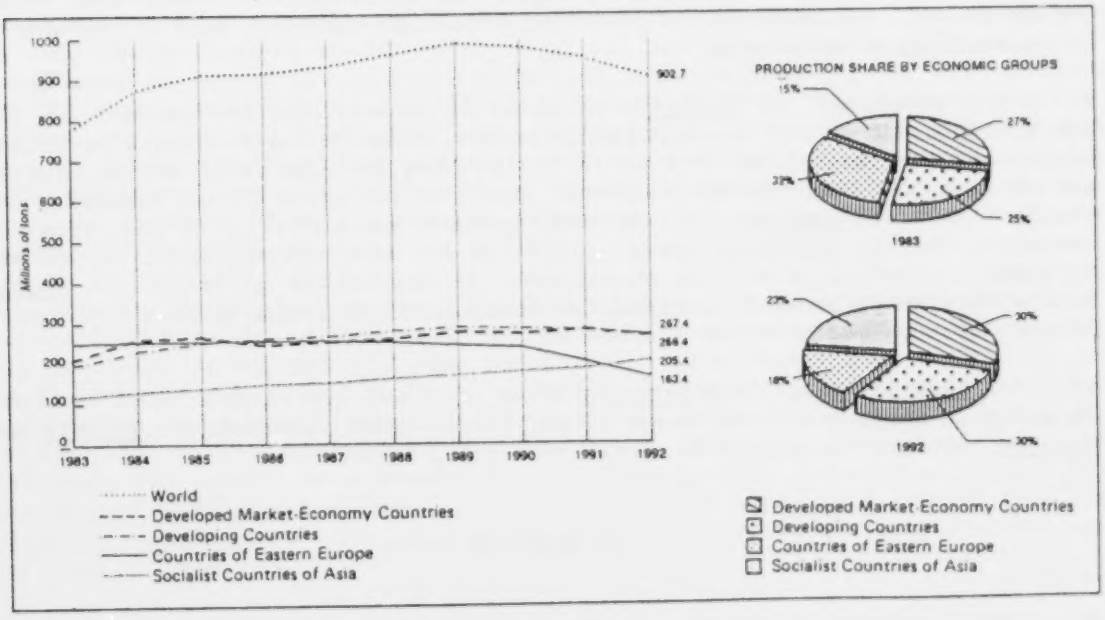
36. Brazil is the other major producer and the leading world supplier of pellets. CVRD exported 13 million tons of pellets in 1992 from its 6 plants (4 are joint ventures with foreign clients) which have a total annual capacity of 17 million tons. Samarco, another Brazilian pellet producer, is increasing its pelletizing capacity and exported nearly 5 million tons in 1992. In Canada pellet production in 1992 declined slightly to less than 20 million tons, of which 13 million tons were exported. Sweden experienced a slight improvement in pellet output and exports in 1992. LKAB has 3 pellet plants with a total capacity of 10 million tons, and decided to construct a new 4 million tons capacity plant anticipating a shortage of pellets during the second half of the 1990s. In Venezuela and India pelletizing capacity is being expanded to meet the growing demand of domestic DRI plants.

37. The prospects for improved pellet market conditions in the medium term are based on two premises: (i) the fast growth of the DRI market would continue, and (ii) environmental regulations are likely to limit the expansion of new sintering plants. For DRI plants, pellets account for nearly 80 per cent of their ore needs. Total DR-pellet mining capacity is currently estimated at 45 million tons, but only 22 million tons of pelletized ore were consumed in DRI plants in 1991, roughly 10 per cent of world pellet output. As DRI output is projected to reach 35 million tons in 2000 (see paragraph 24 above), the availability of DR-pellets is expected to follow this increase.

B. Regional Developments

38. In view of the depressed iron ore demand in 1992, a situation which is continuing in 1993, almost all export-oriented mines operated at reduced rates of capacity utilization. In most cases, production planning has been adjusted downwards in an effort to keep supply as close as possible to demand. Nevertheless, as previous investment decisions had already been made on the basis of the expected more favorable long-term outlook, most capacity expansion programmes continued, although some targets are being re-assessed.

Chart 4
WORLD PRODUCTION OF IRON ORE



1. Africa

39. In 1992 iron ore production in Africa further declined. Since 1990 the reduced level of economic activity in Liberia had a negative impact on total iron ore output from developing Africa, which in 1992 was at its lowest level of the last 20 years, at only 16 million tons.

40. In South Africa the level of iron ore production has remained relatively stable since 1989. In 1992, 28 million tons of iron ore were mined, a small decrease from 1991. Iscor, the South African integrated steelworks, has two mining operations which meet its own requirements and supply the world market with about 15 million tons, of which 60 per cent of lumps. Assoman exports about 3 million tons and has an annual mining capacity of 5 million tons.

41. Mauritania, through SNIM, produced and exported 8 million tons of iron ore in 1992, nearly 2 million tons or 20 per cent less than in 1991. This volume included 1.3 million tons of concentrates from the Guelbs, and the remaining from the Kedia deposits. The M'Haoudat Project is under way and scheduled to start production in the course of 1993; it will gradually reach 6 million tons when in full capacity in order to replace the depleting Kedia ores. Cooperation from the Arab steelmills and assistance from Arab financial agencies have been supportive to the El Aouj pelletizing project, for which a feasibility study is being undertaken.

42. In Liberia, despite the continuing unrest, LIMINCO mined 1.7 million tons of ore, from which 1.3 million tons were exported and the remaining was stockpiled at the port in 1992. During the three years of civil war, Liberian annual iron ore production dropped from 12 to less than 2 million tons. Mining activities were halted in October 1992 and it seems unlikely that they would resume in 1993. At best, if the political situation improves, part of the stocks would eventually be shipped.

43. The government of Guinea continues to promote the development of the MIFERGUI project on the Guinea/Liberia border. Despite the favorable technico-economical feasibility of this project, the long lasting civil war in Liberia and the eventual long-run environmental impact of the project, are hampering its realization. In Senegal, the MIFERSO project is a victim of the economic recession and the depressed market situation for iron ore and steel, which are extremely unfavorable to the development of greenfield projects. In Angola studies are being made to consider the feasibility of resuming iron ore mining in the Cassinga region after the end of the civil war.

44. In Algeria, Egypt, and Zimbabwe about 3, 2 and 1 million tons of iron ore is mined in those countries respectively for internal consumption. Tunisia and Morocco continue to extract marginal quantities of iron ore.

2. A s i a

45. Asia produced 30 per cent of world iron ore output in 1992. In China year after year more iron ore is mined in response to the ever growing expansion of

the Chinese iron and steel industry. In 1992 the volume of iron ore extracted from the Chinese mines reached the record of 196 million tons of crude ore. In terms of extraction, China became the world largest iron ore producing country. However, owing to its low quality (30-35% Fe) and great amount of impurities (titanium, vanadium, rare earth etc), separation is costly and nearly all the ore has to be concentrated; from the nearly 200 million tons only about 95 million tons are finally usable ores. As some deposits are being depleted, the present level of ore supply may slightly decline by 1995, but the development of new mines may bring the 200 million tons level back by 2000. Current mining expansion plans in China foresee a doubling of the present capacity of the Shuichang mine from 9 to 18 million tons, an increase in the capacity of the Qidashan mine from 7 to 15 million tons by 1995, and in addition, the opening of 8 new mines by 1996.[14] The fact that Chinese iron ore reserves are spread in 27 provinces makes the logistics, particularly in terms of beneficiation facilities and transportation, extremely costly.

46. As Chinese domestic ore availability cannot meet total domestic demand, not only imports are growing (see paragraph 80 below) but investments in captive mines have also been made, anticipating Chinese greater ore requirements. First, the Channar joint-venture project developed in Australia in 1990 is now producing more than 5 million tons of ore per year and may produce 10 million tons by 1998, which will be shipped to China. More recently in 1992, Shougang Corp - the second largest steelmaker in China acquired Hierro Peru, the sole iron ore mining company of Peru, whose output is planned to reach 5 million tons in 1993 and 10 million tons by 1995.

47. In India iron ore mining and exporting capacity are currently estimated at 81 and 37 million tons, respectively[15]. In 1992 Indian iron ore output decreased to less than 55 million tons. However, owing to the growth of local steel production, Indian domestic demand is increasing. According to the Government Planning Commission, India may require an additional 16 million tons by 1997 if the present export level of 32 million tons is to be maintained. It is planned to expand the capacity of Bailadila mines from 9 to 13 million tons by 1995 and subsequently up to 22 million tons by 1998. The National Mineral Policy of 1993 has opened up the Indian mineral sector to private and multinational companies, de-restricting 13 minerals including iron ore, which until 1992 were reserved for the public sector. An exception however, is the Goa iron ore industry [16] which operates independently, and in 1992 increased its exports to 13 million tons.

48. In the Democratic People's Republic of Korea it is estimated that about 9.5 million tons of ore were produced annually over the last few years, mostly for domestic consumption and some barter trade with China. However in 1992, a small tonnage was exported to Japan, and North Korean mining facilities are being modernized, which may increase their export potential. In Mongolia geological prospecting in 1992 detected an iron ore deposit which is likely to be developed to supply the country's metallurgical complex currently under construction. In Pakistan a small deposit may be mined as a substitute for imported ore. In Malaysia, Thailand and the Republic of Korea, marginal quantities of iron ore continue to be mined.

3.West Asia

49. In the Islamic Republic of Iran iron ore production is rising jointly with the steel production. The Gol-e-Gohar mining project started at the end of 1992 and is expected to supply 3 million tons of iron ore annually. The Sangan project could eventually produce 4 million tons of concentrates in 1996, while the largest project, the Chador Malu, is being developed for producing 5 million tons of concentrates by 1995. Under this programme, nearly 80 per cent of the Iranian iron ore needs will be met by its own mines in the near future.

50. In Turkey, despite the increase in crude steel output, iron ore production in 1992 remained at the same level of 1991 at around 5 million tons, due to higher scrap imports. Bahrain's pellet plant has an annual capacity of 4 million tons, but apparently produced only 1.5 million tons in 1992, mainly DR-pellets to supply the Gulf and Far-East DRI markets.

4. Eastern Europe

51. In Eastern Europe the downturn continues. In 1992 iron ore production in the region fell sharply by nearly 20 per cent. This drop is still more serious when added to a similar decline in 1991. After four consecutive years of decline, total iron ore output in the CIS (former USSR) reached its lowest level of 162 million tons in 1992, compared to 248 million tons in 1988. For the first time, the CIS lost its position as the world's largest iron ore producer. Given the inter-republic imbalance in commodity supplies, the drop in iron ore production was mainly induced by the problems of coal and scrap delivery, which provoked the stoppage of several blast furnaces causing the slump in iron ore domestic consumption[17]. However, the level of CIS's iron ore exports in 1992 seems to have remained virtually the same as in 1991.

52. Russian Federation, Ukraine and Kazakhstan are the main CIS iron ore producing States. As most ores are low grade, about 80 per cent have to be concentrated at high cost in old facilities with outdated technology, although some magnetic separators have recently been replaced and some facilities are being slowly modernized. Nearly 15 per cent of the mines are underground and extraction costs are also high. The majority of the mines are old, some new equipment such as self-propelled machines has increased the productivity of some, but big investments are required to improve the performance, efficiency and transportation for the iron ore industry in the CIS.

53. In an attempt to reinvigorate its iron ore industry, the Government of Ukraine is promoting the Krivoj Rog metallurgical complex as a potential world supplier of iron ore, particularly to the Mediterranean and West European markets. At present, five mining companies are operating the Krivoj Rog deposits and in 1989 about 50 million tons of Fe was produced, but its concentration capacity is estimated at nearly 70 million tons annually[18]. However, in order to make the Krivoj ores commercially attractive two main problems have to be solved: the need to improve the quality of the ore by lowering the silica (SiO2) content, and the need to establish efficient transportation links.

54. The iron ore situation in other Eastern European countries remained depressed in 1992. In the former Czechoslovakia, following the nearly 10 per cent drop in steel output in 1992, iron ore output which over the last decade has remained at the 1.7 million tons level, declined to 700,000 tons. In Bulgaria only 350,000 tons of concentrates were produced in 1992, half million tons less than the year before.

5. Rest of Europe

55. In the EEC only 8.6 million tons of iron ore was produced in 1992, about 25 per cent less than in 1991. This drop is structural rather than due to the impact of the cyclical market downturn. In France, the ores produced locally no longer meet the quality requirements of the French modern steelworks. In 1992, the French steel group Usinor-Sacilor closeddown one of its Lorraine mines, and the remaining two are scheduled to be closed in 1994. La Mine de Terres Rouge, operated by the Luxembourg steel company Arbed, has invested to improve productivity in order to continue producing about 3 million tons annually. In Spain iron ore output also declined to less than 3 million tons, and the only Spanish miner CAM has to cut costs for survival.

56. Sweden remains the main iron ore producing country in Western Europe, and was one of the few major suppliers which maintained a stable level of output at around 19 million tons, during the 1990/92 period. As SSAB ceased its mining operations in 1992, LKAB is now the only Swedish iron ore producer. About half of LKAB's current production are pellets, and it has nearly 10 per cent share of world pellet trade. With a view to reinforcing its world position, LKAB embarked on a big investment program in order to expand the Kiruna mine and extend its operations until at least the year 2015. A new pelletizing plant is under construction and may start producing 4 million tons annually from 1995[19].

57. Austria continues to produce about 2 million tons of low-grade iron ore annually from its mine at Eisenertz for Voest-Alpine steelworks. In Norway three mines are in operation and their combined output in 1992 was around 2 million tons of iron ore, partially commercialized for non-metallurgical use. Taking advantage of its cheap energy supply, Norway produced 1.5 million tons of pellets in 1992, mainly for exports.

6. Latin America

. The sluggish world demand forced cutbacks in Latin American iron ore output in 1992. In Brazil, despite sustained domestic consumption, the level of iron ore production was reduced to 146 million tons, reflecting the lower level of exports. Cia. Vale do Rio Doce (CVRD) however, maintains its leading position as the world's largest iron ore supplier. In 1992 CVRD adjusted its iron ore production downwards to the same level of exports at 68 million tons. While the annual planned production for Carajas was maintained at 33 million tons, the output from its southern mines declined. Investments have been made to prolong the existing capacity of the Itabira mining complex at around 50-55 million tons. Total production of pellets produced by CVRD and its associates also decreased,

due to weak market conditions. In 1992, CVRD celebrated its 50th anniversary of activities and announced a major diversification program with emphasis on partnerships with end-user metal industries; at present iron ore accounts for 70 per cent of CVRD sales.

59. Despite the worsening market situation, the second largest Brazilian iron ore miner, Mineraçoes Brasileiras Reunidas (MBR) maintained its expansion programme as scheduled. MBR's total production capacity might reach 27 million tons in 1994. In 1992, its 20th year of operations, MBR slightly increased its output to 22 million tons of iron ore, of which 20 million tons were for exports. Ferteco's iron ore mines runned at only 85 per cent capacity, and its output and exports fell below the 10 million tons level in 1992. Ferteco's shipments were affected by congestion at the port of Rio de Janeiro, and the company is carrying out a feasibility study for a possible construction of a new export terminal in Sepetiba. Samitri in 1992 re-opened its Corrego mine, maintained its production level at 10 million tons and proceeded with investments for capacity expansion. Samarco got financial assistance and went ahead with its expansion work which envisages an annual mining capacity of 9 million tons already in 1993.

60. In Venezuela iron ore production in 1992 declined to 18 million tons, almost 10 per cent lower than in 1991. About 35 per cent of Venezuelan iron ore output is used domestically. The mine of Las Pailas which was opened at the end of 1992 is expected to be in full operation in 1993. The expansion programme of CVG Ferrominera is being progressively developed and aims at increasing its annual production to 32 million tons by 1995, and at improving its ore handling capacity as well as its railroad and shipping transportation systems. A pilot concentration plant is scheduled to start operations by mid 1993, enabling the recovery of low and medium grade ores. Furthermore, for the purpose of strengthening its leading position as the world's largest supplier of higher value-added DRI, the work on the construction of the new pellet plant has reached the half way stage, and is expected to be completed by the end of 1994.

61. Chile, through Compania Minera del Pacifico (CMP), produced 7 million tons of iron ore in 1992. At present CMP, which owns about 1 billion tons of ore reserves in Chile, is undertaking an intensive exploration programme to consider the development of new deposits to replace the depleting mines at Romeral and Algarrobo. The exploitation of iron ore deposits in another Latin American country is also not excluded. Furthermore, CMP is considering the expansion of its Huasco pellet plant to 4.5 million tons in the near future and 5 million tons by the end of the decade. In Mexico with the recent privatization of the iron and steel industry, the priority given to the development of the iron ore mining industry may change, as some mines also came into the private sector. During the last five years about 8 million tons of iron ore have been mined annually in Mexico for domestic consumption.

62. In Peru the iron ore mining industry underwent important changes in 1992. Hierro Peru - the formerly nationalized and only iron ore mining company was sold to Shougang Corp., the second largest Chinese independent steel producer. Over the past few years, Hierro Peru has faced serious difficulties in carrying out its mining activities. Despite the annual capacity of 6 million tons, Peruvian iron ore output has been falling year after year and in 1992 was less than 3 million tons. The priorities of the new Shougang Hierro Peru are the rehabilitation of the plants, improvement of efficiency and the resumption of

output from the two pellet plants. The target for 1993 is to produce 5 million tons.[20]

7. North America

63. Iron output in North America declined by 3 per cent to 89 million tons in 1992. In the United States nearly 55 million tons of usable ores were produced in 1992, only half million ton lower than the year before. Recently, no significant change occurred in the structure of the United States iron ore industry, and iron ore continued to be produced by 20 companies operating 22 mines, 16 concentration plants and 10 pellet plants. However, seven mines operated by four companies accounted for almost 90 per cent of total United States output[21]. The operating rates of the North American iron ore industry were around 80 per cent in 1992, and some high-costs mines are facing difficulties to survive. Oglebay Norton, after producing 3.5 million tons of pellets, closed its Eveleth mine in Minnesota from November 1992 to March 1993, owing to a lack of orders.

64. In Canada iron ore output in 1992 totalled 34.5 million tons, 7 per cent lower than 1991. While the level of pellet production was maintained at around 20 million tons, production of concentrates strongly decreased. The two largest Canadian suppliers were affected by the contraction of the Japanese and European markets, and both suspended operations in the summer and around Christmas. Quebec Cartier (QCM) produced less than 14 million tons, its lowest level in six years, and Iron Ore of Canada (IOC) less than 13 million tons, 15 per cent below the level of 1991. The Algona Ore division, the only iron ore producer in Ontario and the only underground mine in North America, may close its mine as part of the ongoing restructuring of the Algona Steel Corp.

8. Oceania

65. In Australia iron ore production declined to around 115 million tons in 1992. As the largest supplier to the Japanese market, Australian iron ore producers were forced to slowdown their output after three years of consecutive growth. Nevertheless, the market downturn has not inhibited the development plans of the Australian iron ore industry, which aims at enhancing its annual supply capacity to 140 million tons by 1995. Hamersley Iron maintained its record production of 50.5 million tons, although shipments dropped by 8 per cent as a result not only of lower demand but also of the June strike. Mining of lump ores from the Brockman Project started in 1992 and output exceed the nominal capacity of 4 million tons. Operations of the Channar joint venture with China exceeded 5 million tons and it is planned to reach 10 million tons within the next few years. Construction work at the Marandoo Project started in 1992, and from 1995 it should start producing 10 million tons annually. This project was considered the best option in terms of quality, reserves and mining conditions as a replacement of the depleting Tom Price's ores which will be exhausted within 10 years.[22]

66. BHP managed to keep its iron ore output closer to shipments at around 45 million tons in 1992, since its lower exports to Japan were offset by higher shipments to other Asian countries. The scale of Mt. Newman's annual operations

are being expanded from 35 to 40 million tons. The Yandi project started in 1992 producing more than 5 million tons to replace the 4 million tons produced by the Yampi mine which is due to close this year. In April 1993 BHP announced the development of the Yarrie deposit, planned to start mining up to 5 million tons from 1994 in order to partially replace the Nimimgarra and the Sunrise Hill mines. In addition, BHP is improving and increasing its shiploading and stockyards capacity from the current 36 to 45 million tons. Under this schema, BHP's overall production capacity is likely to reach 55-60 million tons in the near future.

67. Robe River, the major Australian non-hematite producer, reduced its output from 25 to 22 million tons in 1992, but is going ahead with its capacity expansion programme to reach later in this decade an installed capacity of 32 million tons. By mid 1992 initial mining started at the Area J deposit which should be in full operation in 1993, and by 1995 all Robe's production will come from Area J. Savage River, one of the small producers in Australia, has been mining and concentrating ores in the Tasmania region since 1986, for pelletization, at an annual rate of 1 to 2 million tons-mostly for domestic consumption. At present, studies are being carried out to define whether its operations will continue beyond 1995. Likewise, iron ore operations from other smaller scale producers are under consideration.

68. New Zealand continues to produce and export iron sand since 1972. In 1992 more than 2 million tons were produced at its Taharoa deposits, of which less than 1.5 million tons were exported to Japan. In early 1993 decisions have been taken to improve the present facilities of the Taharoa mine and upgrade its product quality, not only to maintain its exports to Japan, but also to start sales to China.

C. Investments, Financing and Privatizations

69. The recessionary scenario of 1992/93, the sluggish demand and dwindling prices have not prevented the world iron ore industry from going ahead with planned investments. Mining investment strategies are based on a long-term perspective and generally are not tied to economic cycles. However, a long period of declining prices and weak demand highlights the risks involved in such investments. In order to ensure future opportunities, great attention has to be given to the timing of mining cycles and the need to reinforce exploration and mining expenditures.

70. Worldwide the capacity utilization of the iron ore industry in 1992 is estimated at around 80 per cent. Investments in capacity expansion are currently taking place in Australia, Brazil, China, Chile, India, Islamic Republic ofIran, Mauritania, Sweden and Venezuela, while reductions in supply capacity are occurring in Canada, CIS, France and Liberia. Important iron ore deposits are being exhausted and their operating rates are decreasing. Some mining replacements are urged for a quick response to the next market upturn, but capacity expansions should be managed carefully. A temporary cyclical oversupply is a concern, but a long-term structural over-capacity is a major problem.

Table 7
Investments plans for iron ore, 1992 - 1993

Region	Number of projects		Investments ($US millions)	
	1992	1993	1992	1993
Africa	4	2	1,360	920
Asia & Middle East	a 7	a 7	b 1,428	b 850
Western Europe	3	2	600	600
North and Central America	2	0	404	0
South America & Caribbean	6	8	b 368	1,124
Oceania	5	7	720	770
Total	**27**	**26**	**4,880**	**5,624**

Source: UNCTAD secretariat.
a Include small projects in China.
b Not including all the projects.
See also: Annex I -Iron Ore mining projects: new mines and capacity expansion.
Annex II - Iron Ore mining projects: closures and capacity reduction.

71. The growing demand boom from China and developing Asia is being used to justify sizable investments. In the long run, however, this regional demand may not be sufficient to counterbalance the structural declining demand from traditional markets, and the cumulative impact of the shrinking market in Eastern Europe.

72. Fierce competition is also leading to greater cooperation, and to a new profit-making approach. Privatizations and the growing number of joint-ventures, involving domestic and foreign capital, are transforming the corporate structure of the world iron ore mining industry. Noteworthy were the privatizations of ISCOR (South Africa) and CMP (Chile) few years ago, and recently the sale of Hierro Peru (Peru) will possibly be followed by LKAB (Sweden) in the near future.

73. An emerging development is the new Chinese mineral policy oriented towards foreign investments: first, through the joint-venture development of the Channar project in Australia and in 1992 the acquisition of Hierro Peru. Important shifts are also resulting from the growing participation of trading companies, particularly from Japan, in iron ore mining ventures. In India, the opening-up of the mineral sector (see paragraph 47) also means a major step towards a globalized iron ore industry.

74. Mining financing today is mainly provided by institutional investors. Bank and insurance financing conditions have tightened and lenders have become more conservative in their lending practices, due to the economic crisis and the depressed real estate markets. As a result, only the strongest companies are being successful in obtaining funds for mining projects[23]. However, a number of

innovative financial instruments have been put in place to facilitate mining project finance. These includes bilateral loans, debentures, debt for equity swaps, commercial papers etc.

75. Support from international financial institutions, even partial, is helpful to attract financial commitments from other potential investors. However, there are greater environmental conditionalities for credits to new mineral projects. The growing emphasis placed on the private sector has enhanced the role of the International Finance Corporation (IFC), the private sector arm of the World Bank, and the largest source of financing for private projects in developing countries. In 1992 the IFC had a capital increase of 1 billion dollars, but among its mining project approvals only one iron ore project benefited from a loan - MBR's Pico expansion project from Brazil. From the EEC, its most recent loan grant was for the Mauritania's M'Haoudat project in 1992.

IV. TRADE IN IRON ORE

76. World trade in iron ore fell by 8 per cent in 1992 to 365 million tons. Exports dropped more sharply than imports. This resulted from late shipments made in 1991, which were delivered as imports in 1992. All major exporters were affected by the slackening of the world market. Among the top 10 world suppliers, Venezuela, Chile and Mauritania suffered the most severe cuts, while Sweden and the CIS succeeded in maintaining their export level virtually unchanged. Despite the declines, Brazil and Australia each maintained a nearly 30 per cent share of the world market (see table 8). On the importing side, the continued growth of imports into China and the Republic of Korea was insufficient to offset the impact of the sharp drop of imports into Japan (-11%) and the EEC(- 7%).

Table 8
Major iron ore trade partners - 1991,1992

Major Exporters	Share (%) of world exports		Major Importers	Share (%) of world imports	
	1991	1992		1991	1992
1. Brazil	28.8	29.0	1. Japan	32.2	30.5
2. Australia	28.0	28.1	2. Germany	11.0	11.1
3. India	7.8	7.6	3. Rep. of Korea	7.2	8.5
4. CIS	6.9	7.4	4. China	4.7	6.7
5. Canada	7.5	6.8	5. Belgium/Lux.	4.9	4.8
6. Sweden	3.9	4.2	6. France	4.6	4.6
7. South Africa	3.9	4.1	7. United Kingdom	4.7	4.2
8. Venezuela	3.4	2.8	8. Italy	4.5	4.0
9. Mauritania	2.5	2.2	9. United States	3.4	3.3
10. Chile	1.9	1.6	10. Czechoslovakia	3.0	3.1

Source: UNCTAD secretariat.

77. Adversely affected in both volume and value terms, export earnings from iron ore trade amounted to US$ 7.72 billion in 1992 compared to US$ 8.42 billion in 1991. Iron ore companies saw their profitability eroded, although the picture was distorted in countries with undervalued national currencies. Iron ore remains the single biggest export product for Brazil and the second for Mauritania, and it is also one of the top export commodities for Australia.

Table 9
Major iron ore exporting countries, 1983-1992
(million tons)

Country	1983	1986	1990	1991	1992	1992/1991 Change %
Brazil	69.9	92.3	114.3	114.7	106.0	- 7.5
Australia	74.0	79.7	96.2	111.5	102.8	- 7.6
India	20.7	28.1	31.6	31.2	27.9	- 10.5
CIS	42.8	46.2	36.3	27.4	27.0	- 1.4
Canada	24.8	31.0	27.0	29.7	25.1	- 15.3
Sweden	14.2	17.1	16.4	15.5	15.5	0
South Africa	7.8	8.9	17.0	15.5	14.9	- 3.9
Venezuela	6.3	10.0	13.6	13.4	10.2	- 23.6
Mauritania	7.4	8.9	11.4	10.0	8.0	- 20.2
Chile	4.7	4.8	6.5	7.4	5.7	- 22.7
World Total	**313.6**	**364.5**	**394.8**	**397.8**	**365.3**	**- 8.2**

Source: UNCTAD secretariat.

78. Despite the slump, Japan remains the biggest market for iron ore. In the 1990s, however, due to the fast-growing level of iron ore imports in the Republic of Korea and China, the Japanese position has been gradually declining. Japan accounted for 30 per cent of world imports in 1992, compared to 36 per cent in 1982. Japanese iron ore imports in 1992 declined to less than 114 million tons: fines- 62%, lump ores- 28%, pellets- 5.5%, sinter- 3.5% and iron sands- 1%. Australia, Brazil and India supply nearly 85 per cent of the Japanese market (see table 10). During the first half of 1993, as domestic steel demand kept falling, there were still no signs of recovery for iron ore. Steel production during the first half of 1993 was more than 5 per cent higher than the year before, but in view of the de-stocking effect, Japan's iron ore imports during January-June 1993 were more or less at the same level (+ 1%) as in 1992.

Table 10
Iron ore imports into Japan, 1991-1992
(million tons)

Origin	Non-Agglomerated		Agglomerated		Import Share %	
	1991	1992	1991	1992	1991	1992
Australia	52.0	51.7	0.4	0.3	45.9	45.8
Brazil	23.9	23.0	4.6	3.7	22.4	23.5
India	20.7	16.5	0.2	0.1	16.5	14.6
Philippines a/	-	-	4.9	3.9	3.8	3.4
South Africa	5.0	4.8	-	-	3.9	4.3
Chile	2.3	2.1	1.9	1.8	3.3	3.5
Canada	1.7	1.2	-	-	1.3	1.1
Venezuela	1.4	1.7	-	-	1.1	1.5
Others	2.2	2.7	0.4	0.1	1.8	2.3
Total	**115.2**	**103.7**	**12.0**	**10.0**	**100**	**100**

Source: UNCTAD secretariat, "Iron ore statistics 1983-1992".
a/ sintered ore.

79. In China the iron ore market is expanding extremely fast. Iron ore imports into China grew from 3.5 million tons in 1982 to 25 million tons in 1992. China, which 10 years ago was not among the 10 major importing countries, today ranks in fourth place, accounting for 7 per cent of world imports. By far the major supplier to the Chinese market is Australia, although due to market expansion its share, which was 80 per cent in 1989, declined to around 55 per cent in 1992.[24] An important question is how the Chinese market will evolve in the coming years. Assumptions have been based on: (i) the potential growth of Chinese steel consumption per capita (which is presently estimated at only 70 kg, compared with 800 kg in Japan[25]); (ii) the ongoing rapid expansion of the steel industry, which is expected to produce at least 15-20 million tons more in the year 2000; (iii) the constraints in terms of quality, investments and infrastructure for improving domestic iron ore production. These factors suggest that Chinese iron ore imports could reach 40-50 million tons by the year 2000.[26] However, there are two pre-requisites: firstly, sufficient hard currency will be needed to finance growing imports, and secondly, improvements in port facilities seem imperative to allow the unloading of big vessels.

80. The EEC market remained relatively flat until September 1992, but declined sharply during the last quarter of the year following the planned cutback of 20 per cent in EEC's steel output. Iron ore imports were 118 million tons in 1992 (see table 11), almost 7 per cent less than in 1991. Iron ore imports declined in all EEC countries, particularly in Italy and the United Kingdom. Some shipments were re-scheduled, but certain contracted tonnages continued to arrive and stockbuilding was inevitable. The three major suppliers were: Brazil with

38 per cent of the EEC market, Australia with about 17 per cent and Canada with 13 per cent. Pellets accounted for less than 20 per cent of EEC's total iron ore imports. In 1993, the economic slowdown in the Community has been deeper and longer than expected. The depreciation of the EEC currencies and the easing of monetary conditions has not been sufficient to trigger a recovery. Crude steel production during the first half of this year was nearly 5 per cent lower than during the same period in 1992, and prospects for the whole year remain dark.

Table 11
EEC's iron ore imports in 1992
(million tons)

Destin / Origin	Germ	Fra.	Italy	Neth.	Bel/ Lux	UK	Spain	Portug	EEC/a
Non Agglomerated.									
Total	***27.5***	***16.4***	***12.4***	***7.5***	***17.3***	***14.1***	***4.9***	***0.4***	***96.2***
Australia	5.7	3.8	2.2	1.4	1.2	4.7	0.7	-	19.6
Brazil	13.0	6.7	4.5	2.5	6.8	2.8	2.1	-	38.1
Canada	4.2	1.3	0.4	0.6	1.3	1.7	0.2	0.1	9.8
Liberia	0.2	0.2	0.6	-	0.1	-	0.2	0.2	1.5
Mauritania	0.3	1.7	1.6	-	1.5	0.9	0.8	-	6.8
South Africa	0.7	0.3	1.3	-	-	1.7	-	-	4.1
Sweden	2.3	0.4	-	1.6	2.0	0.3	-	-	6.5
Venezuela	0.6	0.4	0.7	0.6	1.0	0.9	0.8	-	5.1
Agglomerated									
Total	***13.8***	***1.0***	***2.6***	***-***	***0.7***	***1.7***	***2.2***	***0.1***	***22.1***
Australia	-	-	-	-	-	0.5	-	-	0.5
Brazil	5.4	-	1.9	-	-	-	0.2	-	7.5
Canada	2.6	0.8	0.5	-	-	0.7	0.4	0.1	5.3
Norway	0.9	-	-	-	0.1	0.3	-	-	1.4
Sweden	3.7	0.1	0.2	-	0.4	-	-	-	4.2
Total,* including others	**41.3**	**17.4**	**15.1**	**7.5**	**18.0**	**15.8**	**7.1**	**0.6**	**118.2**

Source: EUROSTAT and UNCTAD secretariat.
* Differences due to rounding
a/Excluding intra-EEC trade.

81. In Eastern Europe, 1992 was the third year of sharp market contraction. At present the annual demand of Eastern European countries (excluding the CIS) for imported ores is about 25 million tons (see table 12),

less than half of their imports in 1989. The CIS supplied 90 per cent of this regional market. As the level of crude steel production has been drastically reduced, there does not appear to be any room for other suppliers. The restructuring of the iron and steel industry in the region is far from being completed, but while under-utilized and inefficient capacity has tended to disappear, it seems unlikely that crude steel production will be reduced much further. Iron ore demand may gradually stabilize at current levels, particularly in Hungary and Poland. In the CIS, steel output continues to decline (-15% during the first half of 1993), together with iron ore demand, and it is difficult to predict when this trend will be reversed.

Table 12
Iron ore imports into Eastern Europe
(million tons)

Destin	Czechoslo-vakia		Poland		Romania		Hungary		Bulgaria	
Origin	**1991**	**1992**	**1991**	**1992e**	**1991**	**1992**	**1991**	**1992e**	**1991**	**1992**
Former USSR	0.9	10.4	5.8	6.3	4.2	1.7	1.4	1.5	0.6	0.4
Brazil	0.1	-	0.9	0.3	0.7	0.2	0.1	-	-	-
India	0.1	0.7	-	-	1.9	-	0.6	-	-	-
Sweden	0.1	0.1	0.1	0.1	-	-	-	-	-	-
Venezuela	0.1	0.1	0.6		0.1	0.2	0.9	-	-	-
Total (incl. others)	12.0	11.8	7.4	7.0	7.4	2.4	3.0	2.4	0.6	0.4

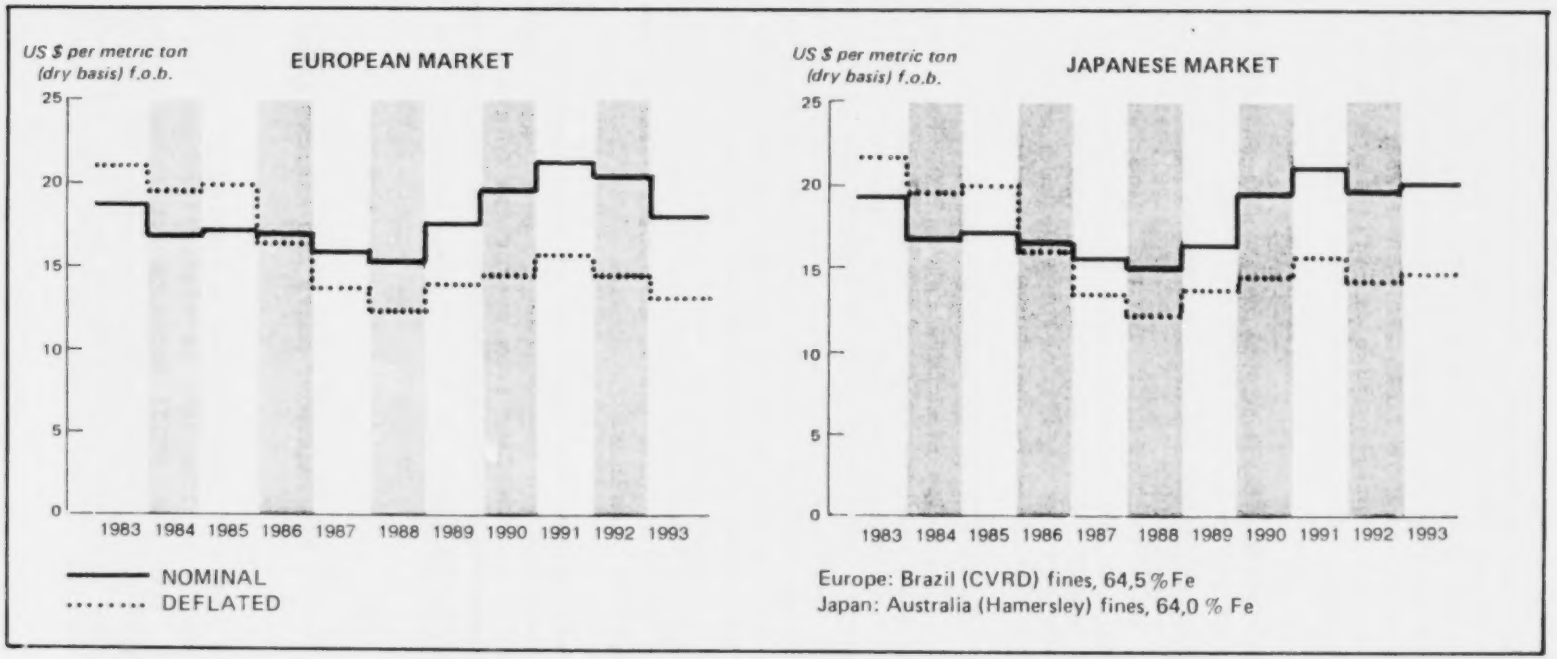
Source: UCTAD secretariat, "Iron Ore Statistics 1983-1992".
e= estimate

V. IRON ORE PRICES

82. In 1992 the upward trend of iron ore prices was reversed. The first signs of weakening demand had become visible by the end of 1991, when the first price settlement made between Australia and Japan resulted in a generalized decline of world prices after three consecutive years of nominal recovery. The reference prices for Hamersley's fines and lumps decreased by nearly 5 and 6.5 per cent respectively. Despite a different market situation, prices for the European market followed the same trend, with pellets declining on average by 7 per cent.

83. As market conditions were worse than expected, the downward pressure on iron ore prices was further accentuated in 1993. The first price settlement was made in Europe, unexpectedly by SNIM from Mauritania and Sollac (Usinor group) from France, resulting in sharp drops ranging from 12 to 15 per cent in FOB

Chart 5
IRON ORE PRICES 1983-1993, NOMINAL AND DEFLATED [a]



Notes: [a] Nominal prices deflated by the United Nations index of unit value of exported manufactured goods (1982 = 100).
For the Japanese market, prices are effective from April/March (fiscal year).
For 1993, deflated index is estimated based on the first quarter of the year.
Price in Japan converted from DLT (dry long ton) to DMT (dry metric ton). Conversion factor = 1.016047.

Source: UNCTAD secretariat.

prices for Mauritania's ores. Deducting freight rate differentials, this benchmark was translated into the reference CVRD's ores, lowering 1993 world prices by 11 per cent for fines and 10 per cent for pellets. Similar prices were agreed upon in Japan, and the price linkage between the two major markets was maintained, taking into account ore qualities and the freight-sharing policy. However, in the case of lump ores, the price premium remained unchanged, and prices fell by 9 per cent in Japan and 12 per cent in Europe. Despite growing demand and a balanced market situation, prices for DR-pellets also fell by 10 per cent, following the trend for blast furnace products, which were in oversupply.

84. Over the two-year period 1992-1993, the cumulative decline in world iron ore prices was of the order of 16 to 20 per cent, which represented the loss of much of the gains obtained during the preceeding three years (1989-1991). In 1992, the mean import price of a ton of non-agglomerated iron ore in Japan was on average US$ 26.76 per ton CIF.[27] The FOB price, which means the actual price received by the iron ore industry for a ton of fines, was on average about US$ 20.40 in 1992 and US$ 18.10 in 1993. In nominal terms, 1993 prices are at exactly the same level as in 1981. For exporting countries, this represents a decline of about one third in real terms (see chart 5).

85. As iron ore is not a homogeneous commodity in terms of size, quality, impurities, etc, its price structure is complex. The concept of a world price for iron ore is also relative. Even if the above-mentioned prices are considered to be the world reference prices and give a clear indication of worldwide trends, the specific prices prevailing in other markets may differ in other parts of the world. The spot market, although small, exists. In North America, for instance, since nearly 80 per cent of iron ore production is from captive mines of steel companies, the bulk of the United States pellets are not sold on the open market. Accordingly, published price quotations neither reflect the demand/supply situation in the United States nor are necessarily indicative of actual costs. This makes price interpretation difficult.[28] United States posted prices have not risen over the last three years, but United States domestic prices in 1993 were higher than world prices.

86. In Eastern Europe, as the lack of hard currency is generalized, most commodity transactions are now supposed to be paid in rubles and in cash, on a free market basis. In the CIS, iron ore prices in ruble terms increased by up to 40 times during 1991/1992.[29] However, as the intra-CIS banking system is not working properly and there is a lack of liquidity, the system is facing a bottleneck.

VI. TRANSPORT COSTS AND FREIGHT RATES

87. Seaborne trade of iron ore was estimated at nearly 340 million tons in 1992. Less than 30 million tons of traded iron ore did not require maritime transportation. Iron ore still accounts for about a quarter of all seaborne trade, and, after coal, is the leading commodity for the dry bulk market. Given the huge tonnages involved, more than 70 per cent of seaborne traded iron ore is presently carried in the largest vessels (100,000 dwt or larger), and most

of the ordered new vessels will be of the large or ultra-large category. The use of combined carriers involving oil and iron ore is declining since the fleet is becoming old, but the availability of dry combined carriers involving iron ore and another dry commodity (coal or grains) is increasing. Over 35 per cent of the present dry bulk capacity is over 15 years old, and recently a number of old vessels were sent for demolition. However, about 70 per cent of the planned newbuilding fleet is scheduled for delivery in 1993/94.[30]

Table 13
Freight rates for iron ore in the single voyage charter market
($US per DWCT)

Trade routes		1983	1989	1990	1991	1992d/
Eastern Canada-	H	3.5	8.8	8.3	7.5	5.1
Europe a/	L	3.0	5.7	3.9	5.0	3.2
(110-130,000 DWCT FIO)	A	3.3	7.1	5.6	6.1	4.0
Liberia	H	4.7	8.7	7.9	7.8	6.0
Europe a/	L	3.6	5.8	5.3	6.1	3.6
(60-80,000 DWCT FIO)	A	4.2	6.9	6.5	6.9	4.7
Brazil-Europe a/	H	5.9	8.8	8.0	8.8	5.9
(80-100,000 DWCT FIO)	L	4.5	6.8	5.2	6.3	3.6
(120-160,000 DWCT FIO)c/	A	5.1	7.5	6.7	7.5	4.5
Brazil-Japan	H	8.9	15.5	15.2	13.5	10.3
(90-110,000 DWCT FIO)	L	7.5	12.2	10.3	11.7	6.8
(125-155,000 DWCT FIO)c/	A	8.2	13.7	12.6	2.9	8.0
Western Australia b/	H	10.8	11.5	10.7	11.2	8.8
Europe a/	L	6.0	8.7	7.7	9.5	5.5
(120-140,000 DWCT FIO)	A	7.6	9.6	9.4	10.3	7.1

H = Highest month L = Lowest month A = Average of twelve months
FIO = Free in and out DWCT = Dead weight cargo ton

Source: Drewry Shipping Consultants Ltd.
a/ Discharge Atwerp-Rotterdam-Amsterdam (ARA) range of ports.
b/ Load Cape Lambert, Dampier or Port Hedland.
c/ From 1989 onwards.
d/ Provisional.

88. In 1992, the dry bulk market was strongly affected by the depressed steel market (steel-related commodities account for half of the total dry bulk trade), and in particular by the lower movements of iron ore and coal into Japan.

Freight rates for iron ore declined considerably in 1992, due to the impact of the oversupply in the Capsize market, but on average they accounted for nearly 25 per cent of final delivery costs for iron ore.

89. For 1993, iron ore negotiations were based on the assumption that freight rates would continue to be low. In Japan, some affreightment contracts were concluded with major iron ore exporters on the basis of freight rate declines of up to 22 per cent. However, during the first half of 1993 the bulk shipping market started picking up, and some freight rates were 20 to 30 per cent higher than in 1992. The upturn of the grain market induced a rise in iron ore and coal rates. This highlights the impact of trade in other commodities on freight rates for iron ore.

VII. TECHNOLOGICAL AND ENVIRONMENTAL ISSUES

90. With the growing competition for market shares and the increasing availability of scrap, iron ore quality is more essential than ever. Iron ore is a finite but not a scarce resource. However, some of the best deposits are being gradually depleted. Australian's Brockman ores, Brazil's Itabira and Mauritania's Kedia are the most significant examples. As a result, R & D investments by the iron ore industry are presently oriented towards technical advances to enable inferior ore types to become economically exploitable and at the same time competitive and acceptable to consumers. There are concerns about the lower availability of ores with a high Fe content, low phosphorus and a consistent physical composition. The changing quality of ores may affect the productivity and costs of modern integrated steelworks, which have been tailored for top-quality ores.

91. Recent technological developments in the minimill sector also point to greater demand for high-quality virgin iron units, required for the production of flat steel products. In addition the concept of a clean iron and steel industry is gaining ground and is working in favour of wider implementation of newer and more environmentally sound ironmaking and steelmaking processes (lower emissions of NOx, SOx and carbon dioxide). Advanced technologies such as DRI, COREX, Iron Carbide, Fastmet, etc, are playing a growing role.

92. Technical improvements have been made to overcome the capacity limitations of the cokeless COREX technology. This process is considered to be both a less costly (20% less per ton of hot metal than the coking/blast furnace process) and a cleaner (15% less of energy) method of steelmaking. In 1992, POSCO from the Republic of Korea ordered a COREX plant with double the capacity (600.000 tons) of the ISCOR plant which has been in operation since 1987. The DRI/COREX combination is another example of the new generation of environmentally compatible technologies, as well as being an energy-efficient process.[31]

93. The iron carbide (Fe3C) technology has also made a step forward. This low-cost and very clean process (it is gas-based, and water is the only by-product) is attracting greater attention from steelmakers, especially the minimills. After years of experiments, the first commercial iron carbide plant is being built in Trinidad and Tobago, to start supplying feedstock to the Nucor plants in the

United States in 1994, and the construction of other plants in some Pacific countries is under consideration. For the HIsmelt process, a pilot plant is being constructed in Australia to test the technical and commercial viability of this direct smelting process. The great interest of both of these new smelting technologies is linked not only to environmental considerations but also to cost-cutting considerations, since the processes involved make it possible to skip the coke-oven, sintering and pelletizing stages. In this case, the adoption of new technologies and more environmentally friendly methods does not necessarily entail higher costs. As far as the iron ore industry is concerned, these processes can make the best use of low grade fines ores which are widely available.

VIII. SHORT-TERM OUTLOOK FOR IRON ORE

94. The outlook for the global iron ore market in 1993 is not bright. As iron ore prices have already dropped sharply , the iron ore industry will accumulate losses in 1993. During the first semester, the world demand for iron ore remained as weak as in 1992. However, if the expected mild global economic recovery does materialize, this will give some strength to the iron ore market in the second half of the year. A modest improvement in world iron ore demand and trade led by China and developing countries cannot be excluded.

95. Since the steel crisis is back in Europe, crude steel output is likely to decline further in the EEC region, as was already the case during the first half of the year (-5%), leading to a further drop in iron ore demand. In the United States, the steel industry is benefitting from strength in durable goods manufacturing and government trade measures to support the industry. Crude steel production was 2 per cent higher during the first half of 1993, and steel activity is likely to be sustained, with a positive impact on the domestic iron ore industry. In Japan, a slow economic recovery started during the second quarter of 1993, and public works are expected to support steel domestic demand; crude steel production in Japan is forecast to be 101-103 million tons in 1993, and from January to June it was more than 5 per cent higher than for the same period in 1992. However, since iron ore stocks were high, this improvement was still insufficient to push up demand for imported ores. For the OECD area as a whole, steel demand is expected to increase by some 2.5 per cent in 1993, and crude steel production should be slightly higher than in 1992.[32] However, in view of the destocking effect, no growth is expected for iron ore demand in industrialized countries.

96. By contrast, steel activity remains buoyant in China, a situation which may continue. Chinese crude steel production increased very fast during the first semester of 1993 (+11%), with a favorable impact on iron ore trade. In developing countries steel demand and crude steel production continue to grow (+10% during the first half of 1993), and demand for traded iron ore increased, particularly in the so-called "dynamic Asian economies" and in the Middle East. In Eastern Europe, in those countries where the reform process is most advanced, declines in steel output may be coming to an end, but in the CIS the steel industry remains depressed.

97. In 1994 economic growth might be gradually re-established in developed market-economy countries. Pushed by lower interest rates and a cyclical resumption of investment, consumer confidence is likely to be restored, with a positive effect on aggregate demand and industrial output. The ongoing adjustment of the steel market might be translated into a stable level of steel output in the OECD area. Developing countries are expected to continue their growth trends. Global iron ore demand and trade are expected to improve.

98. Despite the additional supply capacity, efforts have been made by the iron ore industry to adjust production to the level of demand, aiming at a close demand/supply balance. This may not only help to attenuate losses, but it may also strengthen the suppliers' position in the forthcoming annual negotiations.

Annex I

IRON ORE MINING PROJECTS : NEW MINES AND CAPACITY EXPANSIONS - 1992-1993

Company	Location	Planned capacity	Investment ($ million)	Start	Notes
AFRICA					
SNIM	M'haoudat, Mauritania	6 MM mt/yr ore	170	1994	Lumps/fines at 64% Fe
	El Aouj, Mauritania	11 MM mt/yr ore and 5 MM mt/yr pellets	750	1995?	New project ore at 40% Fe
MIFERGUI	Nimba Mts. Guinea	6-9 MM mt/yr ore	220	?	Fines at 67 % Fe
MIFERSO	Faleme, Senegal	6-10 MM mt/yr ore	620	1997?	Lumps/fines at 62% Fe. Includes railroad and port facilities
ASIA					
Government (CNMMIEC)	Several locations, China	?	128	1995/96	13 projects: 8 new mines and 5 capacity expansions
National Mineral Dev. Corp. NMDC	Deposits No. 5, No. 11 and No. 14, Bailadila,, India	5 MM mt/yr ore	?	1994/95	Expanding the current capacity from 9 to 13 MM mt
	Deposits No. 10, No. 11-A and No. 11-B, Bailadila, India	8 MM mt/yr ore	?	1997/98	Work in progress for capacity expansion from 13 to 22 MM mt
Kudremukh Iron	Mangalore, India	3 MM mt/yr pellets	?	1990s	Expanding pelletizing from 3 to 6 MM mt.
MIDDLE-EAST					
Central Iranian Iron Ore Company	Bafgh, Iran	3 MM mt/yr concentrates	450	1995	Expansion program
Nisco Company	Gol e Gohan, Iran	2.7 MM mt/yr	250	1993	Expansion program
	Chador Malu, Iran	5 MM mt/yr	600	1996	New project to supply Mobarake steel
SOUTH AMERICA					
CVG Ferrominera	Porto Ordaz, Venezuela	7 to 22 MM mt/yr. ore	170	1993/96	Expanding and modernizing mines and plants
	Porto Ordaz, Venezuela	8 MM mt/yr concentrates	400	1996	
	Porto Ordaz, Venezuela	3,3 MM mt/yr. pellets	20	1994	New plant
CMP- Romeral	Los Colarodos, Chile	1 MM mt/yr pellet feed	?	1994	Expand mining capacity for the pelletization
	Los Colarodos, Chile	new deposits	180	1995/98	Feasability studies for replacement
MBR	Pico,Minas Gerais, Brazil	From 3,5 to 7 MM mt/yr ore	274	1994	Expanding capacity from 24 to 28 MM mt/yr
Samarco	Minas Gerais, Brazil	1.5 MM mt/yr ore pellet feed	50	1994	Expansion mining and pellet plant
Samitri	Minas Gerais, Brazil	2.5 MM mt/yr ore	30	1993	Expanding capacity
OCEANIA					
Robe River	Mesa J, Australia	8 MM mt/yr ore	80	1993	Expansion capacity from 24-32 MM
BHP	Yandi, Australia	initially 5 MM mt/yr ore Expansion to 10 MM mt/yr	85	1992-93	Greenfield project Started in 1992 and expanded in 1993
BHP	Yarrie Pilbara, Australia	5-6 MM mt/yr ore for 6 years	40	1994	New mine, initially 1.5 MM gradually 5MM
Hamersley Iron	Channar Pilbara, Australia	5 MM mt/yr ore		1998	Expanding capacity form 5 to 10 MM mt/yr for China
Hamersley Iron	Brockman Pilbara, Australia	4 MM mt/yr. ore (5-7 years)	50	1992	Greenfield expansion to continue supply lumps
Hamersley Iron	Marando Pilbara, Australia	10-12 MM mt/yr. ore	500	1995	New mine to extend and replace Tom Price deposits
Portman Resources	Kaolyanobbing, Australia	1.5 MM mt/yr. ore	15	1993	Reopened mines for exports
EUROPE					
LKAB	Kiruna, Sweden	2 MM mt/yr ore	315	1996	Extending capacity from 13-16 MM mt/yr
	Kiruna, Sweden	4 MM mt/yr pellets	285	1995	New pellet plant

Source: UNCTAD secretariat based on the work of the Intergovernmental Group of Expert on Iron Ore

Notes: The information provided is not exhaustive, additional information and/or revisions are welcome.

MM = million M = thousand mt = metric ton $ = US dollar

ANNEX II

IRON ORE MINING PROJECTS : CLOSURES AND CAPACITY REDUCTIONS- 1992-1993

Company	Location	Reduction of of capacity	Effective or planned date	Temp (T) Perm (P)	Notes
AFRICA					
LIMINCO	Yekepa, Liberia	closed (from 2 MM to 0)	1992/93	T?	Produced 1.7 MM in 1992 No operations in 1993
Bong Mining	Yekepa, Liberia	closed (from 6 MM to 0)	1991	P?	Dammaged mining and pelletizing facilities
NORTH & CENTRAL AMERICA					
Algona Ore Div.	Ontario, Canada	1.1 MM mt/yr ore	1993	P	Pending final decision
Wabush Mines	Labrador, Canada	From 6 MM to 4.5 MM/yr	1992	T	Market adjustement
Eveleth Mines	Minnesota, USA	From 5 MM to 3 MM/yr	Nov 92/Mar 93	T	Market adjustement
Las Encinas	Colima, Mexico	1.2 MM mt/yr pellets	1994	P	Depletion of reserves
EUROPE					
Usinor, Lovmines	Lorraine, France	3 MM mt/yr	1994	P	Uneconomical One of the three mines already closed in 1992
SSAB	Dannemora, Sweden	0.6 MM mt/yr	1992	P	Uneconomical
OCEANIA					
BHP iron ore Ltd	Koland Island, Australia	4 MM mt/yr ore	1993	P	Depletion of reserves

Source: UNCTAD secretariat based on the work of the Intergovernmental Group of Expert on Iron Ore.

Notes: The information provided is not exhaustive; additional information and/or revisions are welcome.

MM = million M = thousand mt = metric ton

T= temporary P= permanent

Notes

1. As addressed in the paper Structural changes in the iron ore market, by E. dos Santos-Duisenberg, presented at the Metal Bulletin Iron Ore Symposium, Lisbon, April 1993.

2. The steel industry of Japan 1992, by the Japan Iron and Steel Federation, Tokyo, 1992.

3. According to the steel index analysis made by the Center for International Business Cycle Research, Metal Industry Indicators, published by the U.S. Bureau of Mines, Washington, April 1993.

4. See CIS re-ties links between steel mills, by Metal Bulletin, 13 May, 1993.

5. As stated in the paper The outlook for iron ore demand in Asia by Mr.M. Iwanaga, of Mitsui & Co., presented at the Metal Bulletin's International Iron Ore Symposium, Lisbon, April 1993.

6. According to the annual steel statistics compiled by the International Iron & Steel Institute, Brussels, April 1993.

7. See Direct from Midrex, 1st Quarter 1993, published by Midrex International, USA.

8. As analysed in the paper Raw materials for Midrex iron - Technical & Commercial Considerations, presented by D. Meissener at the annual session of the Intergovernmental Group of Experts on Iron Ore, held in Geneva, October 1992.

9. See Ferrous scrap jump, American Metal Market, 7 January 1993; Scrap leads the way up, in Metal Bulletin, February 15, 1993; Cold ferrous raw materials prices continue to rise, Tex Report, 19 May, 1993.

10. See Tables 20 and 21 in "Iron ore statistics 1983-1992" (TD/B/CN.1/IRON ORE/7) UNCTAD.

11. According to para. 85 of the UNCTAD report "Review of the current situation and outlook for iron ore - 1991" (TD/B/CN.1/IRON ORE/8).

12. See The steel market in 1991, (ECE/STEEL/78) published by the United Nations Economic Commission for Europe, Geneva, 1992.

13. As reported in the article "US producers look to 1992 for improvements", published by Metal Bulletin Monthly, April 1993.

14. See Rapidly Growing Chinese Steel Industry and Iron Ore Supply-Demand, published by Tex Report with the cooperation of the Iron Ore Department of Mitsui & Co., May/June, 1993; and "China - Socialist market hungry for steel",in Metal Bulletin Monthly, February 1993.

15. See Development of India's iron ore resources, by K.S.Mahapatra, presented at the International Seminar - Iron Ore 2000 and Beyond, held at Bhubaneswar, India, January 1993.

16. Cf. the paper The Goan Iron Ore Industry: A Profile by A. Girardi, presented at the Metal Bulletin Iron Ore Symposium, April 1993.

17. Cf. is made to the article Russian steelmaking faces a crisis, by L. Shevelev, Director of the Russian Federation Committee of Metallurgy, published by the American Metal Market, August 19, 1992.

18. According to a recent study presented at the Metal Bulletin Iron Ore Symposium in April 1993, by Prof. J. Elbrond Iron Ore from Krivoj Rog in Ukraine. A Supplier for the 21st Century?

19. As indicated in the paper The Swedish iron ore industry towards the years 2000, by K. Jarnulf, presented at the session of the Intergovernmental Group of Experts on Iron Ore, Geneva, October 1992.

20. Cf. "China's Shougang Corp. Buys Marcona Mine" published by Skillings' Mining Review, December 12, 1992; "Hierro Peru plans huge rise in output" by Metal Bulletin, January 28, 1993; and Peruvian Iron Ore, Mine Operator to value existing sales routes, by Tex Report, 26 January, 1993.

21. See: "US Iron Ore Industry in 1992", article by the U.S. Bureau of Mines, which appeared at the Skilling's Mining Review, 6 February 1993.

22. Reference is made to the paper Marandoo: Contributing to Hamersley's Future, presented by R.C.Kinkead-Weekes at the Metal Bulletin Iron Ore Symposium, Lisbon, 1993.

23. See: "A close look at mining risk", article published by Engineering & Mining Journal, January 1992; "Attracting investors: what is to be done?, by Mining Magazine, January 1993; "Project finance - A banker's view", in Mining Journal, November 1992.

24. According to the figures of the UNCTAD Trust Fund Project on Iron Ore Information, "Iron ore statistics", published in June 1993

25. Based on information compiled by the International Iron and Steel Institute, Brussels, 1992.

26. A number of recent studies forecast iron ore and steel developments in China for the rest of the decade. Special reference is made to two 1993 papers: The current state of the iron ore market and possible developments in the nineties, by K-P. Pieper from Rohstoffhandel GMBH; and The outlook for iron ore demand in Asia, by M. Iwanaga from Mitsui & Co. Ltd.

27. According to data prepared by Japan Iron and Steel Federation based on customs statistics of the Ministry of Finance of Japan, April 1993

28. See Metal prices in the United States through 1991, by the U.S. Bureau of Mines, Washington, 1992; and The state of the North American Iron Ore Market, by K.Kirsis, Paine Webber, New York, 1993.

29. As stated by a Ukrainian steel industry director in "Ukraine steel hopes to ride out difficulties", in Metal Bulletin, 19 October 1993.

30. See The importance of the freight market to iron ore trades, paper presented by SS&Y Research Services at the 1992 session of the Intergovernmental Group of Experts on Iron Ore. Reference is also made to the report Shipping Review & Outlook, by Clarkson Research Studies, London, Spring 1993.

31. See "Clean steel gets to melting point", in Financial Times, 2 February 1993; "Editor's note", Iron and Steel Engineer, December 1992; and COREX Ironmaking & DRI-making, by E.Eichberger and D. Siuka, 1992.

32. According to the press release of the OECD Steel Committee, Paris, April 1993.

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